

Serial No. 09/756,821
Art Unit 3726

REMARKS

Disposition of Claims

Upon entry of the foregoing amendments, claims 1-2 and 7-8 will remain pending in the application and stand ready for further action on the merits. Claim 1 has been amended herein to recite a distinctive third step, wherein the separate heat-dissipating pin members are mounted onto the surface of the base plate. This amendment is fully supported by the specification particularly at paragraph 20, lines 11-16. No new matter has been added to the application. Claims 2 and 7-8 are dependent on amended claim 1.

Rejections Under 35 U.S.C. §103(a)

The Office Action states that claims 1-2 and 7-8 are rejected under 35 U.S.C. §103(a) as being unpatentable in view of Mashiko et al., U.S. Patent 6,253,829 ("Mashiko") for the reasons set forth in Paper Nos. 12 and 16. Applicant submits that the present invention, as recited in amended claims 1-2 and 7-8, is patentable over Mashiko for the reasons discussed below.

As discussed above, Applicant has amended claim 1 to further clarify that the pin elements are separate parts that are mounted onto the surface of the base plate. In Applicant's method, a single mold containing integrated sections for the base plate and pins is not used, and the resulting heat pipe construction is not a unitary, molded structure. The base plate and pin elements are not molded integrally with each other. Rather, the heat-dissipating pins and base plate are separate and distinct members that are subsequently conjoined. The pins are specially designed heat-dissipating elements that are manufactured apart from the base plate. The fabricated pins are mounted subsequently to the base plate in a separate step as recited in amended claim 1. The pins may be made from metal, while the base plate is made from a thermally conductive filled polymer composition as described at paragraphs 11 and 20 in the specification.

Serial No. 09/756,821
Art Unit 3726

In contrast, the Mashiko process involves pouring a molten metal such as copper, aluminum, magnesium, or a metal alloy into a die-casting cavity having protruding heat-radiation fins. When the molten metal in the cavity solidifies, the base is molded integrally with the radiation fins. (col. 2, lines 36-42). The die-casting cavity may contain a heat pipe to provide a "construction in which the heat pipe is mounted in the base integrated with the fins." (col. 2, lines 63-67).

Thus, in the Mashiko metal die-casting process, the objective is to make an integrated heat-sink assembly having a base plate molded integrally with heat radiation fins having a large surface area. The base may contain a heat pipe which is surrounded by the cast metal. Referring to FIG. 28, Mashiko describes this casting process:

From this state, the plunger 14 is moved in the direction of arrow of FIG. 28 to apply the pressure to the molten metal 13. Then, all the area of the outer circumference of the container 91 and the root of the injection nozzle 95 are wetted by the molten metal. Moreover, the lower edges of the individual fins 8 are confined by the molten metal 13. This state is left as it is for a predetermined time period to solidify the molten metal 13. Thus, the container 91 and the lower edges of the individual fins 8 are cast integrally with the base 7 of Al or its alloy so that these three components are jointed to one another. (col. 15, lines 61-67 and col. 16, lines 1-4, emphasis added).

In contrast to the teachings in Mashiko, Applicant's method, as recited in amended claim 1, includes mounting heat-dissipating pin members onto the base plate in a separate step. The pins are not integrated with the base plate in a single molding operation, and the resulting heat pipe construction is not a unitary, molded structure.

Mashiko does not provide any suggestions or hints for a method of making such a heat pipe construction. As discussed above, the entire essence of Mashiko is to a process for casting molten metal to form a heat-sink assembly having an integrally-cast base plate with heat-radiation fins. Mashiko does not teach the step of mounting separate pin elements onto a base plate.

Serial No. 09/756,821
Art Unit 3726

In view of the foregoing, Applicant believes that claim 1 (as amended) is in condition for allowance. Claims 2 and 7-8 are dependent on amended claim 1; thus, Applicant submits that these claims also are in condition for allowance. Accordingly, it is respectfully requested that the rejections of claims 1-2 and 7-8 (as amended) under 35 U.S.C. §103(a) be withdrawn.

Conclusion

In summary, Applicant submits that claims 1-2 and 7-8 (as amended) are patentable and each of the Examiner's rejections and objections has been overcome. Accordingly, Applicants respectfully request favorable consideration and allowance of amended claims 1-2 and 7-8.

The Commissioner is hereby authorized to charge any additional fee required in connection with the filing of this paper or credit any overpayment to Deposit Account 02-0900. Should there be any outstanding matter that needs to be resolved in the present application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,

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